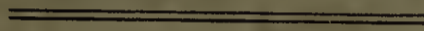


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TRENGGANU.



Annual Medical and Sanitary Report
For the Year 1938.

TRENGGANU

Scale, 12 Miles to an Inch

REFERENCE

- Roads
- Alienated Land
- Mining
- Mining Concession



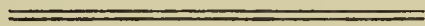
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TRENGGANU.



Annual Medical and Sanitary Report
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I.—ADMINISTRATION.

(A) Staff.

(a) *Medical Officers.*

Dr. G. I. H. Braine prior to going on leave was relieved by Dr. A. Bearblock on 21st February 1938. On August 30th Dr. Bearblock was transferred to Tan Tock Seng Hospital and was relieved by Dr. A. L. Sheild.

(b) *Assistant Medical Officers.*

Dr. Ten Yoon Fong L. M. S. served throughout the year at Kuala Trengganu.

Dr. Raman Peruvanum Seshadri L. M. S. resigned from the service on 31st August 1938.

Dr. Suppiah Kangalinggam L. R. C. P. & S. (Edinburgh), L. R. F. P. & S. (Glasgow) was transferred from Dungun to Kemaman on 22nd October 1938.

Dr. T. Danaraj L. M. S. has been seconded to this State and reported for duty at Dungun on 7.2.39.

The strength of the staff at the end of the year was as follows:—

Medical Officer	1
Assistant Medical Officers	2
Male Dressers	29
Staff Nurse	1
Nurses	2 (1 grade III, 1 probationer)
Midwives	4
Vaccinators	4
Health Inspectors	3
Clerks	4
Steward & Store-keeper	2
Menials	46

(B) Legislation.

The following enactments were passed during the year:—

The Poisons Enactment No. 61 of 1356 was passed on 3.1.1938.

The Deleterious Drugs Enactment No. 62 of 1356 was passed on 1.7.1938.

Rules under the Registration of Dentists Enactment No. 23 of 1356 was passed on 21st February 1938.

(C) Finance.

	Actual Expenditure
Personal Emoluments	\$ 71,744.69
Annually Recurrent	47,461.09
Special Votes	1,480.03
	\$120,685.81

(N.B.—\$1.00=two shillings and four pence).

The revenue collected by the Medical Department was as follows:—

Hospital charges	\$2,483.12
Sale of medicine	539.50
Licences to druggists and dentists	150.00
Registrar, Births and Deaths	65.50
Miscellaneous'	52.35
Total	\$3,290.47

The following table compares the financial position with that of previous years:—

Year.	Revenue from Medical Department.	Revenue of State.	Expenditure of Medical Department.	Expenditure of State.	Percentage of Medical to State Expenditure.
1934 ..	\$ 764.05	\$1,699,319.12	\$ 59,380.93	\$1,405,157.17	4.23%
1935 ..	1,693.68	2,196,949.07	69,601.05	2,038,841.49	3.41%
1936 ..	1,929.46	2,431,519.52	92,928.96	1,911,730.81	4.86%
1937 ..	3,079.65	2,660,398.98	112,516.16	2,645,686.33	4.25%
1938 ..	3,290.47	2,427,004.47	120,685.81	2,360,446.88	5.11%

The expenditure of the State included \$240,668.20 in respect of repayment of loans to the Straits Settlements Government.

(D) Buildings.

The following buildings were completed during the year:—

Kuala Trengganu.—

Two wards for third class patients, each containing 30 beds.

One 2nd class female-ward containing 6 rooms.

A six-roomed ward for mental patients.

A new 110 volt D. C. electrical plant was installed.

Besut.—

A six-roomed emergency ward is partially completed.

Kemaman.—

The new administration block at the hospital, containing office, an operating theatre was completed in February 1938.

II.—PUBLIC HEALTH.

(A) Population.

The population at the 1921 census was 153,765 while at the 1931 census it was 179,789 of which 92,354 were males and 87,435 were females. It comprised:—

Malaysians	..	..	..	..	..	164,564
Chinese	..	..	..	..	..	13,254
Indians	..	..	..	..	..	1,371
Europeans	..	..	..	..	..	35
Eurasians	..	..	..	..	..	15
Others	..	..	..	..	..	550

Calculated by the geometrical method, the mid-year population was 201,370 and the rates for births and deaths are calculated on this basis. For the majority of the population this method is fairly accurate but the Indian population has probably trebled itself, due to their recruitment for the Japanese Iron Mines.

(B) Births.

There were 8,259 (6,845)* live births registered during the year of which 4,269 (3,501) were males and 3,990 (3,334) were females; the ratio of male to female births was thus 1,069 (1,050) per 1,000 females born. The birth-rate was 41.01 (34.53) per mille.

*Throughout this report the figures in brackets are for 1937.

The number of still births recorded was 337 (295) giving a rate of 40 (41) per 1,000 total births.

Appendix B sets out the births according to race.

(C) Deaths.

The number of deaths registered was 4,785 (4,427) giving a rate of 23.76 (22.33) per mille; of these 2,626 (2,406) were males and 2,159 (2,021) were females. The highest number of deaths was 518 (in November) and the lowest 271 (in October). Deaths of children under five years of age numbered 2,083 (1,717) or 43.53% (38.78%) of the total deaths.

Appendix B shows the deaths arranged according to sex, race and age-group.

Causes of Deaths.—The main causes of deaths as reported during the last five years have been:—

	1934	1935	1936	1937	1938
Unspecified fever and Malaria (vi.) ..	2,529	2,557	2,661	2,761	2,756
Convulsions	1,031	996	1,095	867	1,245
Intestinal Diseases	273	264	172	183	113
Beri-beri	68	76	61	23	31
Respiratory diseases	134	143	140	90	115
Maternal Mortality	51	77	64	53*	65*
Old age	308	238	217	212	229
Accidents	63	50	66	60	39
Others causes	133	218	197	182	192
Total ..	4,590	4,619	4,683	4,431	4,785

A closer analysis of the causes of deaths would be useless for the reasons given in previous reports and the number of deaths certified by qualified medical practitioners amounted to less than 4% of the total.

Of the 2,756 cases of unspecified fever and malaria, 86 were due to malaria, two of which were due to black water fever, five were stated to be due to *demam kepialu* which means a long continuous fever and might possibly be enteric or typhus. As to the others, no cause can be assigned.

Noxious Animals.—Six (8) persons were killed by tigers, and one by a snake.

Maternal Mortality.—Sixty-five (50) women were stated to have died as the result of child-birth giving a rate of 7.89 (7.0) per thousand total births (alive and still). Two women died as the result of abortion.

*Includes 2 death from abortion.

(D) Infantile Mortality.

The number of deaths of children aged under one year was 1,654 (1,202) or 28.93% (27.15%) of the total number of deaths of which 953 (699) were males and 701 (503) were females. The infantile mortality rate was 200.26 (175.60) per mille. The mortality rate of children under the age of 4 weeks (per 1,000 live births was 76.89 (73.05).

The following table shows the infant mortality rates per mille according to districts for the past five years:—

	1934	1935	1936	1937	1938	1938	
						No. of births.	No. of infant deaths.
Besut ..	157.35	115.01	182.13	146.23	142.09	943	134
Setiu ..	196.01	172.98	283.15	162.17	177.70	315	56
Batu Rakit ..	248.10	226.74	288.21	150.11	214.81	540	116
K. Trengganu ..	236.19	200.66	201.72	174.89	209.96	3753	788
Ulu Trengganu	106.51	269.07	141.37	139.10	110.74	605	68
Marang ..	186.70	239.32	190.71	149.28	184.53	401	74
Dungun ..	299.42	257.31	280.75	207.09	242.73	482	117
Paka ..	314.29	317.92	267.07	267.70	259.56	208	54
Kemasek ..	307.69	238.99	278.78	252.81	219.39	237	52
Kemaman ..	247.27	250.76	230.78	218.18	251.61	775	195
Whole State ..	221.33	207.65	213.09	175.60	200.26	8259	1654

This table is arranged geographically, Besut being in the North and Kemaman in the South, and with the exception of Ulu Trengganu—all are situated on the coast.

Ulu Trengganu (inland) is very malarious and the spleen rate is high but the infant mortality rate is lower than anywhere else in Trengganu. On the other hand, the mortality rate is high in the coastal towns where there is little malaria and the spleen rate is low, so that malaria cannot be considered one of the major factors involved.

As was pointed out in the 1937 report, the main factors are (a) improper feeding (b) the conditions of extreme squalor that still persist in many of the towns although a great deal has been done to reduce this.

Mothers prefer to give their children condensed rather than breast milk and if the child does not thrive, bananas, rice, cocoanut milk etc. are added to the diet. Parents seem unwilling to avail themselves of the child welfare clinics or, if the mother is willing to attend, the grandmother will be successfully obstructive.

Each year a portion of the more squalid houses in the towns are demolished but there is still a great deal of work to be done in this respect.

(E) Registration of Births and Deaths.

The Medical Officer is registrar while he has a clerk who acts as Assistant Registrar. There are deputy registrars at the following 42 places:—

Hospitals, Kemaman and Dungun—Assistant Medical Officers

28 Police Stations—Officers in charge.

2 Customs Offices—Officers in charge.

10 Offices of Penghulus (district head-men).

It is considered that the registration is now fairly complete—but there were 9 prosecutions for failure to register births and 5 for failure to register deaths.

The following table shows the number of births, deaths and deaths of infants with the corresponding rates since the inception of registration in Trengganu. The mid-year population has been calculated from the census figures of 1921 and 1931 by the geometrical method:—

Year.	Mid-year Population.	Number of Births.	Birth Rate.	Number of Deaths.	Death rate.	Number of Infant Deaths.	Infantile Mortality rate.
1928 ..	172,222	4,555	26.45	4,847	28.14	1,619	355.43
1929 ..	174,936	4,841	27.67	4,763	27.23	1,643	359.39
1930 ..	177,693	6,189	34.83	4,501	25.84	1,573	254.14
1931 ..	180,493	6,489	35.05	4,323	23.05	1,469	226.38
1932 ..	183,338	6,836	37.29	4,809	26.24	1,643	240.35
1933 ..	186,227	7,078	38.01	3,619	19.43	1,159	163.75
1934 ..	189,161	6,330	33.46	4,590	24.27	1,401	221.33
1935 ..	192,142	7,055	36.72	4,619	24.04	1,465	207.65
1936 ..	195,170	7,105	36.51	4,683	23.99	1,514	213.09
1937 ..	198,246	6,845	34.53	4,427	22.33	1,202	175.60
1938 ..	201,370	8,259	41.01	4,785	23.76	1,654	200.27

III.—HYGIENE AND SANITATION.

(A) Special Diseases.

The most reliable information as to the incidence of disease in Trengganu is to be obtained from the statistics of patients treated by the Medical Department. As has been pointed out above, the report of deaths are more trustworthy as to fact than as to cause.

(i) Malaria.

The incidence of malaria varies widely in different parts of Trengganu. The coast line, where approximately two thirds of the population resides, is comparatively free. Inland from the coast the incidence of malaria rises rapidly—particularly amongst the people living on the upper reaches of the North Trengganu rivers. Fortunately the population of these districts is sparse and inhabitants live mainly by shifting cultivation. The Perhentian Islands are highly malarious—the spleen rate being over 90%. In June of this year—the Health Officer, Pahang was consulted and after his visit to the Island he suggested that a ravine at the back of the largest Kampong on Perhentian Kechil should be cleared and oiled. This was done in August and during a survey made in October no anopheline larvae were found. It is too soon to draw any conclusions but it is hoped that after further clearing has been done in 1939, the malarial rate will drop.

The neighbouring island of Redang has a lower incidence, the spleen rate being approximately 35%.

The following figures are relevant:—

	1937.	1938.
Number of deaths reported as being due to malaria ..	84	86*
Number of death reported as being due to fever unspecified ..	2,677	2,670
Number of deaths reported as being due to convulsions ..	867	2,670
Total death rate per mille	22.33	23.36
Number of out-patients treated by Dept. for malaria ..	20,860	20,318
Percentage of out-patients treated by Dept. for malaria ..	14.64	15.39
Number of in-patients treated by Dept. for malaria as principal disease	579	1,305
Percentage of Malays (i.e. the stable population) admitted into Government hospitals suffering from malaria as the principal disease	7.08%	16.49%
Spleen rate of school children	3.02%	2.65%

*Of 86 cases of death from malaria 2 (0) were due to Blackwater fever.

As regards the mines and estates, there were 10 deaths from this cause in an average monthly population of 7,084 as compared with 15 deaths in an average monthly population of 7,073 during 1937.

(ii) **Dangerous Infectious Diseases.**

There were no cases of plague, cholera, smallpox or other dangerous infectious diseases.

Vaccination against smallpox—Primary vaccinations numbered 7418 and revaccinations 115, a total of 7,418 as compared with 12,394 in 1937. No difficulties are encountered by the vaccinators in performing their work. The details are as follows:—

	Primary Vaccinations.	Revaccinations.	Total
Vaccinator Besut	1,383	1	1,384
Vaccinator Kuala Trengganu	3,489	23	3,512
Vaccinator Kuala Brang	966	82	1,048
Vaccinator Dungun	480	9	489
Dispensaries	69	—	69
Travelling Dressers	916	—	916
Total	7,303	115	7,418

(iii) **The Typhus Group of Fevers.**

The following table shows the number of cases which have been diagnosed so far;—all have been confirmed by serological tests:—

Type Serological Type.	"Scrub" Typhus B. Proteus X"K"	"Shop" Typhus B. Proteus X"W"	Deaths.
1935	3	0	1
1936	2	2	1
1937	2	1	0
1938	0	1*	0

*This case came from Kuala Trengganu.

(iv) **Bowel Diseases.**

The number of deaths reported to have been due to diseases of the bowel was 111 (183).

The continued low incidence of dysentery and enteric fever is remarkable in view of the low hygienic standard that obtains in regard to conservancy and water supplies. Doubtless the filtering action of the sandy soil on the coast plays a great part while the people living on the banks of the rivers are too scattered to pollute the rivers to any serious extent.

Dysentery.—Fifty-three (62) cases were treated in Government Hospitals of which 39 (19) were amoebic while 136 (196) were treated as out-patients of which 5 (24) were reported as amoebic. In addition, 48 (38) of dysentery were reported from the estates and mines. There was no epidemic.

Enteric Fever.—Only 14 (19) cases were reported but there were 2 (0) deaths.

Helminths.—These are very prevalent and 69.88% (72.02%) of all specimens of stools examined at the hospitals and dispensaries had some kind of helminthic infection which was usually multiple (microscopic film method). The worms encountered were:—

Ankylostoma	in 23.42% of cases
Ascaris	in 39.31% „ „
Trichuris	in 40.60% „ „
Strongyloids	in 0.14% „ „
Lambliia intestinalis	in 0.35% „ „

One case of clonorchis sinensis was seen.

Treatment by santomin and oil of chenopodium is very popular and 19,212 patients were treated by the Medical Department as the principal disease.

(v) **Cerebro-spinal Meningitis.**

There was no case of cerebro-spinal meningitis.

(vi) **Tuberculosis.**

One hundred and fifteen (90) people were reported to have died of respiratory disease and 42 (51) of these deaths were said to have been due to tuberculosis. Nineteen of these deaths occurred in Government Hospitals and accounted for 15.83% (25.76%) of the total deaths there.

(vii) **Beri-beri.**

This disease is most prevalent in December, January and February *i.e.* towards the end of the Northwest Monsoon and is mostly of the Peripheral neuritic type. It is not an infrequent complication after child birth, enteric and severe malaria.

Dramatic result are obtained in cardiac cases by using injections of vitamin B, but unfortunately the same excellent results are not obtained in the neuritic cases which are slow to respond to any form of treatment.

The disease is mostly confined to the coastal population where polished rice is eaten.

It is rare to find cases in the interior where home grown unpolished rice is the staple diet.

This year there has been a further decrease in the number of cases, 790 patients being treated as compared with 1190 in 1937, but there were 31 deaths compared with 23 last year. There was no death due to Beri-beri on any of the mines or estates.

(viii) **Yaws.**

The number of cases treated by the Department during the last five years have been:—

	Admissions In-patients.	Percentage to Total Admissions.	Out-patients Treated.	Percentage to Total number of Out-patients Treated.
1934 ..	422	23.24	3,995	4.24
1935 ..	324	13.68	4,334	3.78
1936 ..	257	10.45	2,845	2.17
1937 ..	231	6.78	3,694	2.59
1938 ..	114	3.01	11,123	8.43

Of 2,909 school children examined only 2.61% showed signs of yaws as compared with 3.80% in 1937, and these cases only showed the tertiary lesions.

The fact that 11,123 cases were treated this year does not mean that there has been any increase in the disease but merely that in September, October, November and December an intensive campaign was carried out with Stovarsol.

(ix) Other Infectious Diseases.

Chickenpox.—Small outbreaks occurred from time to time all over the State. 17 (38) cases were reported with no deaths.

Diphtheria.—No case was reported.

Influenza.—This term includes the common cold; 3,636 (4,797) cases were treated by the Medical Department.

Measles.—Nineteen (25) cases were reported and there was no (0) death from this cause. 3 cases occurred on estates or mines.

Mumps.—Seven (44) cases were recorded with no (0) death.

Tetanus.—There was only one case and the patient died as the parents refused anti-tetanic serum injections.

Whooping Cough.—Four (31) cases was recorded. There was no outbreak.

(B) GENERAL MEASURES OF SANITATION.

(i) Town Boards and Staff.

There are town-boards at the following places:—Besut, Batu Rakit, Kuala Trengganu, Marang, Kuala Dungun, Paka, Kretay, Kemasek, Kijal and Chukai Kemaman. In most cases there are unofficial as well as official members on the boards and in all cases the Presidents are Malays.

The Medical Officer is also the Health Officer in Trengganu and the Assistant Medical Officers at Dungun and Kemaman act as Assistant Health Officers.

There are qualified Health Inspectors at Kuala Trengganu, Dungun and Kemaman while Dressers act as Health Inspectors in the smaller places.

The subordinate staff in the principal districts is as follows:—

	Overseers.	Mandors.	Drivers.	Coolies.			Total.
				Cleansing & Padang.	Markets & Lighting.	Conservancy.	
Besut, Kpg. Raja & Kuala Besut	1	0	0	10	3	—	13
K. Trengganu	1	2	5	47	10	10	67
Kuala Dungun		1	1	10	2	4	
Kemasek (Kuala Kemasek & Ayer Jerneh)				5	1	0	6
Chukai, Kemaman	1	1	0	9	2	0	11

(ii) Anti-malarial Measures.

As has been pointed out, the larger towns are free from malaria and anti-malarial measures are most required where such are most difficult to achieve.

No oiling is done by the Government except at Marang and, this year, at the Perhentian Islands.

As yet there is no legislation with regards to mosquito control but it is proposed to bring this matter to Governments notice again in 1939.

(iii) Sewage Disposal.

Kuala Trengganu.—The “double—pail system” started in 1937 has continued to work satisfactorily and there are 526 latrines being served by the two conservancy lorries.

(b) Kuala Dungun.—The conservancy system here has increased its service from 121 latrines at the end of 1937 to 208 latrines at the end of 1938.

(c) Chukai.—The private contractor continues to serve the town satisfactorily. There are 297 latrines in all, an increase of 27 over the 1937 figure.

(iv) Refuse Disposal.

Disposal of refuse is by control tipping in the larger towns and by burning and burial in the villages.

In Kuala Trengganu there are 3 lorries used to remove rubbish and one in Kemaman and one in Dungun.

(v) Water-Supplies.

In all the towns and larger villages water is obtained from shallow and for the most part unprotected wells while in the up country districts it is usually obtained from the rivers. The water is of fair quality thanks to the sandy nature of the soil but in larger towns a certain amount of pollution goes on due to the absence of a proper drainage system.

During the year boring was carried out by the Public Works Department in the hope that adequate supply for the town could be found. These efforts have been found unsuccessful and a further search will have to be made in 1939.

(vi) Drainage.

The drainage systems are poor and concrete drains are few but the whole area of the town has been surveyed and in 1939 a proper drainage system will be commenced in conjunction with the new Town Planning.

(vii) House Inspections.

Inspection of houses is regularly performed at Kuala Trengganu, Kuala Dungun and Kemaman by the Health Inspectors and recommendations are made to the Town-Boards concerned.

64 houses were recommended for demolition at Kuala Dungun and 28 houses at Kuala Trengganu while similar action was taken in a number of cases in the other towns. Action has already been taken in the majority of these cases.

(viii) School Hygiene.

Medical Inspection.—Twenty-five (23) Government schools and 6 (10) private schools were inspected by the Assistant Medical Officers and Senior Dressers. All the children underwent a medical examination and were later given the opportunity of treatment. The number examined was 3,229 (2,148) which was 90.09% (85%) of the number on the roll. The following tables gives figures for 1938.

Districts.	Number Pupils Examined.	Dental Caries. %	Yaws. %	Enlarged Spleen. %	Ulcers. %	Skin disease. %
Besut	402	23.63	7.2	3.73	5.97	16.42
Stiu	215	1.86	8.84	1.86	11.63	10.23
Kuala Brang	48	16.67	4.17	16.67	0.00	16.67
Dungun	117	52.14	0.00	10.26	11.97	1.71
Kemasek	117	30.77	0.00	3.44	2.56	11.97
Kreteh	48	47.92	0.00	6.25	2.08	8.32
Kijal	82	23.20	1.22	1.22	9.67	19.51
Kemaman	437	35.93	0.00	2.75	5.26	0.69
Ulu Kemaman	91	43.96	0.00	16.48	4.40	5.50
Kuala Trengganu	1,352	71.59	1.85	0.22	3.32	10.21
Whole State	2,909	48.47	2.61	2.65	5.05	9.56

Total number of pupils on roll	3,229
" " " " examined	2,909 = 90.09%

Percentage of enlarged spleen:—

	1934	1935	1936	1937	1938
Kuala Trengganu	0.26	0.72	0.31	0.19	0.22
Rest of State	5.96	4.33	5.81	5.51	4.75
Whole State	3.12	2.38	2.73	3.02	2.65

Percentage of Yaws:—

	1934	1935	1936	1937	1938
Kuala Trengganu	16.60	13.50	7.03	3.10	1.85
Rest of State	13.94	5.17	13.20	4.52	3.28
Whole State	Not available		9.79	3.80	2.61

Dental caries is very prevalent but an Assistant Dental Officer will be appointed in May 1939 and work will be commenced amongst the school children.

(ix) Labour Conditions.

Certain details abstracted from the health reports sent to the Medical Officer every month are summarised in Appendix C.

(a) Mines.—There are in Trengganu two iron ore and three tin mines that employ labour on a large scale and two estates that also employ many labourers.

This year there has been a steady improvement in the health and living conditions in most of these mines and estates. (a) The Nippon Mining Company which has the largest number of employees (average monthly population 3,112) has a hospital and dispensary while the Medical Staff consists of two doctors, one dental surgeon, a dresser, a nurse and a midwife who are all Japanese subjects.

There was a qualified Indian Health Inspector until July 1938, but since he left he has not been replaced.

During the Medical Officer's last visit in September 1938, it was pointed out to the Manager that there was obviously no trained supervision of anti-malarial work, rubbish disposal etc. The Manager proposed that one of the Medical Officers should supervise this work but if there is not a decided improvement seen when the Medical Officer again inspects this mine, a qualified Health Inspector should be engaged.

The present hospital accommodation is inadequate but a new hospital ward is almost completed and will ease the congestion. Total hospital admissions were 1,421. The death rate was 3.86 per mille (1937=7.23 per mille).

The sum spent by the Company in 1938 for anti-malarial work and sanitation was \$32,037.10.

(b) The Ishihara Sangyo Koshi Co. has an average monthly population of 960. Conditions on this mine in the early part of 1938 were far from satisfactory but many improvements were carried out in the latter part of the year.

In June work was commenced on five new coolie lines and later the work on a new permanent hospital was commenced to accommodate 28 beds.

Anti-malarial work cost \$998.89 but there remains a great deal more to be done. A Japanese doctor is employed by this mine and also a third grade dresser.

At the Sungei Ayam Tin Mines (average monthly population 57), Bundi Mining Company (average monthly population 537) there was also general improvement in health conditions but on the Kajang Mining Company, conditions were not satisfactory and steps are now being taken to see that improvements suggested some time ago are carried out without further delay.

(b) Estates.—

The Kretay Plantations and Estate which are both under the same management have an average population of 972. There were 110 cases of malaria during the year, with no deaths. The death rate was 13.39 (11.45) per mille.

The following figures are relevant:—

Anti-malarial work and sanitation	\$ 3,735.55
Medical supplies—improvements to wards etc.	4,347.91
Coolie welfare work	1,158.58
New piped water supply to coolie lines	20,000.00

Jabor Valley Estate is situated in the extreme South of Trengganu and can only be reached via Kuantan in Pahang. The average monthly population was 1,122 and the death rate was 31.19 per mille (32.64). Health conditions on this estate have been greatly improved, and 1939 should show a marked improvement in the death rate. Of the 611 cases of malaria treated, 3 died.

The following figures are of interest to show the anti-malarial work that is being done.

(i) Oiling etc.	\$ 2,400
(ii) Drainage	\$10,000

(a) From April 1937 to December 1938, approximately 3,600 chains of drains were dug, 170 chains of streams cleared and 15 chains river-deviation work carried out at a cost of \$10,000.

There is a good piped water supply, and the hospital accommodation is more than adequate and well run.

All these estates were visited by the Medical Officer or the Assistant Medical Officers and Health Inspectors. A number of smaller mines and estates were also inspected.

The number of coolies admitted from these concerns into Government Hospitals was 334 of whom 269 were suffering from malaria and the details were as follows:—

Nippon Mining Company	77
Kretay Estates & Plantations	6
Sungei Ayam Tin Mines Ltd.	21
Bundi Tin Mine	1
Kajang Kemaman (1925) Ltd.	0
Ishihara Sangyo Koshi Ltd.	225

There were 6 deaths, 4 being due to malaria.

(x) Housing and Town Planning.

Fairly wide municipal limits have been fixed in the towns and within these limits, site and building plans have to be passed by the Town-Boards before a house may be built. Additions and renovations to buildings also have to be sanctioned by Town-Boards. In Kuala Trengganu, the rule is that all plans for permanent buildings, additions and renovations to a value of \$500.00 and over have to receive the sanction of the Medical Officer while the Health Inspector inspects all the other plans.

This year, Bukit Payong, a rapidly growing village 8 miles from Kuala Trengganu, was brought under the control of Kuala Trengganu Town-Board.

Town Planning.—

This is progressing and plans have been passed for an approved type of shop house for Trengganu.

Kuala Dungun which grew rapidly in 1937, has not progressed so quickly in 1938, only two new shop houses being erected, as compared with 29 in 1937. Probably the exodus of 3,000 Chinese labourers from Nippon Mining Company in the early part of the year is the reason for this.

At Jerteh in Besut, rapid progress was made in the building of new shop-houses.

(xi) **Food in Relation to Health.**

The following premises are licensed:—Coffee-shops, eating-houses, lodging-houses, ice-factories, aerated water factories and bakeries. In the larger towns, regular inspections are paid by the Health Inspectors and all are inspected at least twice a year (and the worst ones more often) by the Medical Officer and Assistant Medical Officers. Gradual improvement is being effected.

Markets.—In the towns there are markets of a semi-permanent type while the villages have temporary markets.

The Market in Kuala Trengganu is still inadequate but a new one is to be built on the land reclaimed from the river. New markets of a semi-permanent type were built at Dungun, Paka and Kuala Brang during the year.

(xii) **Other Licensed Premises.**

Laundries, bakeries billiard saloons and hair dressing saloons have to be licensed and are regularly inspected by the Medical Officer.

(xiii) **Measures taken to Spread the Knowledge of Hygiene and Sanitation.**

The Medical Officer, Health Inspectors, Dressers and other officials endeavour to impress upon the people the necessity of keeping their houses and surrounding compounds in a clean condition but the results obtained are very disappointing.

(xiv) **Dentists and Druggists.**

Compulsory registration is in force and the Medical Officer is the registrar.

There are 20 (22) dentists in practice, none of whom has proper qualifications. Dentists now have to possess annual practising certificates. Rules providing for better premises, clean utensils etc. can now be enforced.

Druggists.—The numbers of registered druggists is 5 (8). A new schedule of deleterious drugs is being drawn up and will soon be enforced.

Control of Drugs.—The Medical Department helps the Customs Department to control the import of drugs while returns of all drugs imported are sent to the Medical Officer for scrutiny. All deleterious drugs are first sent to the Medical Officer before release.

V.—MATERNITY AND CHILD WELFARE WORK.

There are 5 midwives in the service of the Department while the staff nurse and the nurse are also qualified midwives. There are 3 other qualified midwives in residence in the State one of whom is employed by the Nippon Mining Company, Dungun.

(A).—**Maternity Work.**

Cases conducted in Kuala Trengganu Hospital numbered 103 (102) while cases conducted in the patients' homes numbered 305 (248).

The following are the summaries of the work performed:—

Maternity Cases Conducted for 1938.

	Malays	Chinese	Indians	Others	Total	Maternal Deaths	Still births	Infant died 1st 10 days including Premature
Kuala Trengganu Hospital ..	4	94	5	—	103	3	6	3
K. Trengganu Town Clinic ..	69	50	3	1	123	—	7	—
Midwife, Besut ..	58	3	1	—	62	—	—	—
Midwife, Dungun ..	20	39	3	2	64	—	—	—
Midwife, Kemaman ..	—	63	3	—	66	—	2	1
Total ..	151	249	15	3	418	3	15	4

Abortion and Miscarriages.

	Malays	Chinese	Indians	Others	Total
Kuala Trengganu Hospital	—	1	0	0	1
Kuala Trengganu Town Clinic	7	1	—	—	8
Midwife, Besut	2	—	—	—	2
Midwife, Dungun	—	1	—	—	1
Midwife, Kemaman	—	1	—	—	1
Total	9	4	—	—	13

Women appearing for Ante-natal Examination.

	Malays	Chinese	Indians	Others	Total Attendances	Total Attendances
Kuala Trengganu Hospital	—	4	4	1	9	—
Kuala Trengganu Town Clinic	68	24	10	1	103	256
Midwife, Besut	44	2	1	—	47	54
Midwife, Dungun	5	15	4	—	24	33
Midwife, Kemaman	—	3	1	—	4	4
Total	117	48	20	2	187	347

General Hospital, Kuala Trengganu.—It is only here that accommodation for inpatients is available. The number of cases conducted was 103 (102) including 4 (13) Malays. There were 3 deaths, one from post partum haemorrhage and two following Caesarian section.

Kuala Trengganu Town Clinic.—The number of cases treated by the Japanese Midwife was 123 (161) including 69 (61) Malays and 50 (50) Chinese.

Besut.—The Malay Midwife conducted 62 (55) cases of whom 58 were Malays.

Dungun.—The Midwife conducted 64 cases of whom 20 were Malays and 39 Chinese and 5 other various nationalities.

Kemaman.—Here 66 cases were conducted, nearly all the cases being Chinese.

(B) INFANT AND CHILD WELFARE SERVICES.

It is hoped with the help of the four midwives in the districts to build up gradually a child welfare service. After delivery, they are expected to pay ten daily visits to the mother and child. When not otherwise engaged, they assist in the treatment of women and children in the dispensaries.

A maternity and child welfare clinic is run in conjunction with the Kuala Trengganu Town-Dispensary. The following table compares the number treated during the years 1937 and 1938:—

	1937	1938
Number of infants treated under 1 year of age	225	225
Number of children treated aged 1—12 years	1,117	1,271
Cases receiving ante-natal treatment	69	103

Infant and Child Welfare Service in the Government Hospitals.

	Kuala Trengganu Hospital.	Chukai Kemaman Hospital.	Kuala Dungun Hospital.
No. of infants treated under 1 year of age ...	19	3	—
No. of children treated aged 1—12 years ...	66	7	7
Cases receiving ante-natal treatment ...	9	—	—

VI.—HOSPITALS AND DISPENSARIES.

(A) HOSPITAL IN-PATIENTS.

The following accommodation is now available for in-patients:—

Kuala Trengganu Hospital	190 beds
Dungun Hospital	20 beds
Kemaman Hospital	28 beds
Total	238

The charges are moderate, being 40 cents a day for admission to the general wards (payment is usually made by companies on behalf of their coolies) and \$1.00 per day in the case of the special wards. The Majority of 3rd Class patients are unable to pay and receive Free Treatment.

The cost of diet was as follows:—

	cts.
Kuala Trengganu.—General wards	11.20 p.d. approx.
Special wards	40.39 p.d. approx.
Kuala Dungun.— General wards	23.89 p.d. approx.
Kemaman.— General wards	18.45 p.d. approx.

The following is the summary of the work performed at the hospitals:—

	1938			All hospitals including Transfers.
	Kuala Trengganu General Hospital.	Kemaman Hospital.	Dungun Hospital.	
Total number of Admissions	2,101	1,062	620	3,783
„ „ „ Females admitted	364	68	19	451
„ „ „ Malays admitted	892	165	104	1,161
„ „ „ deaths	67	42	11	120
Number of deaths per 100 admissions ..	3.19	3.95	1.77	3.17
Number of deaths excluding cases dying within 48 hours of admission	48	25	11	84
Number of deaths per 100 admissions excluding cases dying within 48 hours of admission ..	2.28	2.35	1.77	2.22
Number of cases of child birth conducted in maternity ward	103	21	4	128
Number of operations (excluding teeth extraction)	216	127	72	415
Number of deaths after operation	7	1	—	8
Number of cases treated by dental extraction ..	205	146	8	359

The returns of diseases and deaths of in-patients is set out in Appendix D.

The following figures relate to the prevailing diseases treated:—

Disease.	Admissions.	Deaths.	Mortality per cent.
Malaria acute (Parasite demonstrated in Blood)	658	13	1.98% (1.80)
Malaria Acute (clinical diagnosis)	626	9	1.44 (0.43)
" " Cachexia	17	2	11.76 (7.69)
Blackwater fever	4	2	50.00 (0)
Influenza	93	0	0 (0)
CHEST AFFECTIONS:—			
Bronchitis	84	0	0 (0)
Pneumonia	28	13	46.43 (28.57)
Empyema & Pleurisy	4	0	0 (80.00)
Pulmonary Tuberculosis	71	19	26.76 (25.00)
INTESTINAL AFFECTIONS:—			
Diarrhoea and enteritis	29	2	6.89 (0)
Dysentery	54	2	3.70 (10.34)
Hepatic Abscess (Amoebic)	1	0	0 (25.00)
OTHER AFFECTIONS:—			
Helminthic diseases	103	0	0 (0.81)
Beri beri	155	8	5.17 (1.85)
Anaemia	23	2	4.34 (0)
Yaws	114	0	0 (0)
SURGICAL CONDITIONS:—			
Chronic ulcer	224	0	0 (0)
Wounds, Fractures, etc.	227	3	1.32 (0.43)
Abscess, boils, cellulitis			
Carbuncles, etc.	98	0	0 (0.91)
Burns & Scalds	18	1	5.55 (0)
VENERAL DISEASES:—			
Syphilis, late manifestations	11	1	9.09 (27.27)
Hereditary	1	0	0 (0)
Syphilis, other forms	30	0	0.0 (0)
Other venereal diseases	213	1	0.47 (0)

NOTES ON PREVAILING DISEASES AMONG HOSPITAL PATIENTS.

(i) Malaria.—There were 1,305 (579) admissions which represents 34.49% (16.99%) of the total admissions. The mortality for all types of cases was, 1.99% (1.38%) the details are given above. Quinine hydrochloride is usually exhibited but atabrin is given in special cases; most of the severe cases are treated with intramuscular injections of quinine. Plasmoquine is subsequently given if crescents have been found.

The following table shows the figure of Malaria for a period of five years in comparison:—

	Admissions.	Deaths.	Mortality per 100 case treated.
PERIOD 1929—1933:—			
Acute malaria—parasites demonstrated in blood	241	17	7.05
Malaria, clinical diagnosis & cachexia ..	1,407	33	2.34
PERIOD 1934—1938:—			
Acute malaria—parasites demonstrated in blood	1,597	28	1.75
Malaria, clinical diagnosis & cachexia ..	1,457	21	1.44

The following table shows the type of malaria in the case confirmed by microscopical identifications:—

	1937	1938
Subtertian	187	347
Benign Tertian infection	111	234
Quartan infection	24	28
Mixed infection	12	49

There were 4 cases of blackwater fever in 1938.

Venereal Diseases.—Although there has been a slight decrease in syphilis and gonorrhoea there has been an increase in soft-sore and lympho-granuloma venereum.

During the latter part of 1938 a particularly virulent type of soft sore was seen that continued to spread rapidly and destroy tissue no matter what treatment was given. Cauterisation with a Paquin Cautery was resorted to (no diathermy is available) and has given excellent results. Most of the cases came from Dungun and it is thought that this virulent type of soft sore has been imported by sailors on overseas ships. Dungun is one of the ports where free treatment in hospital is given to sailors, but up to date no advantage has been taken of this.

The number of inpatients treated throughout the State according to race was as follows:—

	Malays	Chinese	Indians	Others	Total
Gonorrhoea	76	43	47	2	168
Syphilis	2	18	22	10	42
Soft sore and Lympho-granuloma Venereum	5	25	12	3	45

The number of outpatients treated throughout the State at the Dispensaries was as follows:—

Gonorrhoea	516
Syphilis	23
Soft-sore & Lympho-granuloma Venereum	86

(iii) Pulmonary Tuberculosis.—There were 71 (68) cases with 19 (17) deaths giving a mortality rate of 25% (25%).

(iv) Dysentery.—Forty-four (58) cases were admitted. There were 39 (15) cases of amoebic dysentery with no (0) death, 7 (15) cases of bacillary dysentery with 1 (3) deaths and 8 (18) cases with 1 (1) death in which the case was undefined. In addition, there was 1 (4) cases of amoebic liver abscess with no death.

(v) Beri-beri.—There 155 (108) cases with 8 (8) deaths, giving a mortality rate of 5.18% (1.85%). It has been pointed out elsewhere in this report that excellent results are obtained in those cases with cardiac symptoms by the use of Vitamin B, injections but the results of using the same preparation in the neuritic type is most disappointing.

Tropical Typhus.—There was 1 (3) admission with no death. It was proved to be of the "shop" type and came from Kuala Trengganu.

No case of tsutsugamushi has yet been diagnosed in Trengganu.

(B) OUT-PATIENTS.

There are permanent Dispensaries at the following places:—

Kampong Raja, Besut.
Kampong Buloh.
Kuala Trengganu Town.
General Hospital, Kuala Trengganu.
Kuala Brang.
Hospital, Kuala Dungun.
Hospital, Chukai Kemaman.

In addition, there are small dispensaries at Setiu and Kemasek each in the charge of a travelling dresser while a travelling dresser is attached to the Kampong Raja Dispensary and to each of the Hospitals; these travelling dressers are all Malays. The work of the travelling dressers is greatly restricted during the period of the north-east monsoon (November—March). The State is, in general, fairly well served by these dispensaries and travelling dressers, with the exception of Paka river basin where a small dispensary should be established. In November 1938, this department purchased its own out-board motor boat and it is hoped that a far greater scope of work will be covered along the various rivers than was possible before.

The number of new cases treated by these dispensaries and travelling dressers was 131,972 (125,640) while the total number of attendances was 157,673 (157,853).

In addition to performing vaccinations, the vaccinators distribute medicines during their visits and the number of cases so treated was 21,114 (15,822).

Eleven rural police stations and four customs stations which are situated in places where there are no dispensaries, are supplied with small stocks of simple drugs such as quinine, antiseptic lotions and ointments, etc., for distribution and 1,170 (863) treatments were given.

There is no dispensary in the extreme South of Trengganu. The Jabor Valley Estate is paid a small sum of money in return for medical attention to the few Government servants who are stationed there.

The following table shows the numbers treated:—

	1937		1938	
	New Cases.	Total Attendances.	New Cases.	Total Attendances.
Cases treated by Dispensaries & Travelling Dressers	125,740	157,853	110,273	135,382
Cases treated by Vaccinators	15,822	16,571	21,114	21,706
Cases treated by Customs and Police stations ..	863	863	585	585
Total	142,425	175,287	121,972	157,673

Appendix F shows the number of patients treated at the various dispensaries.

One thousand, seven hundred and fifty four patients were visited by the dressers at their homes.

The Medical Officer is always in attendance at the Dispensary of the General Hospital, Kuala Trengganu; he attends personally to most of the calls from His Highness the Sultan and family, Europeans and some Asiatics while he is called into consultation by the other officers. Regular visits are paid by him to the towns and villages in the State and to the larger mines and estates, although he is now helped to a great extent by the Assistant Medical Officers and the Health Inspectors.

A visit was paid to Pulau Perhantian. Visits were made to the villages along the lower reaches of the Trengganu river while towards the end of the year a series of weekly visits were paid to the villages round Kuala Trengganu in connection with campaign against yaws.

(C) OPERATIONS.

A list of operations is given in Appendix E. 795 people underwent operations, mostly of a minor nature and 360 were teeth extractions.

The Malays dislike coming into hospital at any time but dislike operations even more. The difficulties that one has to contend with are well illustrated by the following case.

Soon after the present Medical Officer came to Trengganu, a man was admitted in extreme respiratory distress, due to an inoperable growth of his thyroid gland which at this stage was slowly choking him to death. He was also in the last stages of cachexia and emaciation. A low tracheotomy was performed and due to the fact that the trachea had been displaced by the growth, a rather larger incision than usual had to be made.

He was extremely grateful for the relief that the operation gave him and died quietly in his sleep a week later. Nothing more was thought of this until two days later the British Resident telephoned to the Medical Officer and said there was an hysterical woman on his door step alleging that the Medical Officer had cut her husband's throat. He explained to her the reason for the operation but unfortunately she had already spread the news about the town that the new doctor, if he could not cure people, cut their throats. Surgery suffered a slump for some time.

(D) LABORATORY WORK.

This summarised in Appendix G. All the permanent dispensaries are now equipped with microscopes while specimens for serological examinations are sent to Kuala Trengganu as required.

VII.—PRISON HOSPITALS.

The prison hospital has now been closed and the prisoners come to a special ward in the hospital.

VIII.—INSTITUTION FOR MENTAL DISEASE AND LEPROSY.

(A).—MENTAL DISEASE.

Mental Patients are no longer kept in the prison as was done before 1938, and now come to a special ward in the Kuala Trengganu hospital. If after supervision for some time there is no likelihood of improvement, they are transferred to the Singapore Mental Institution.

The following table refers to the lunatics maintained at the Singapore Mental Hospital:—

	Males.	Females.	Total.
Remaining on 1.1.38	10	2	12
Admitted	8	2	10
Total treated	15	0	15
Discharged	1	0	1
Died	3	0	3
Remaining on 31.12.1938	17	2	19

(B).—LEPERS.

The number of lepers maintained by the State in Sungei Buloh Settlement are as follows:—

Males	Female.
11	1

IX.—HEALTH OF THE EUROPEAN POPULATION AND ASIATIC OFFICIALS.

The total number of Europeans resident in the State was 26 (27). There was no death (0). The following table shows the sick, invaliding and death-rate of the European Officials:—

Total number of officials resident	.. .. .	23
Average number of resident	.. .. .	16
Total number on sick leave	.. .. .	9
Total number of days on sick lists	.. .. .	92
Average daily number on sick-list	.. .. .	0.25
Average number of days of sick leave for each patient	.. .. .	4
Total number invalided	.. .. .	0
Total deaths	.. .. .	0
Number of cases of sickness contracted away from residence		0

Asiatic Officials.—The total number of new cases treated was 4,051 (5,105) of which 1,487 (1,708) were members of the Police Force. Most of the officials were examined during the year for signs of tuberculosis.

X.—METEOROLOGY.

Reading on the instruments kept at the General Hospital Kuala Trengganu showed that:—

The highest temperature of 93°F was recorded on 25.4.38.

The lowest temperature of 71°F was recorded on 18.11.38.

The month with the highest rainfall was November with 34.65 inches.

The highest rainfall within 24 hours was 9.57 inches and this occurred on 21.11.38.

The total rainfall for the year was 115.20 (107.26) inches.

Rain-gauges are also kept at the dispensaries at Kuala Dungun, Kampong Raja, Besut on the coast, and Kuala Brang in the interior of the State. The Annual rainfall in the interior of the State as estimated at Bukit Besi and Kuala Brang, is usually about 40 inches higher than on the coast. The wettest part of the year is the period of the north-east monsoon which falls between November and March and this greatly interferes with the travelling work of the dressers. The rainfall at Kuala Brang was 142.01 (164.86) inches, that at Kampong Raja 113.64 (139.29) inches and that at Kuala Dungun 139.08 (119.47) inches.

XI.—VETERINARY WORK.

There is no veterinary department in Trengganu and any work of this nature falls upon the Medical Department.

There was no epidemic of any importance. Cattle were examined at Kuala Trengganu and Kemaman prior to export.

The Quarantine and Prevention of Diseases Enactment which came into force on 6.3.37 also applies to animals.

The Medical Department have to perform inspections prior to the export of cattle.

The following prohibition as regards import are still in force.

Disease.	Animals.	From	Extent of order.
Rinderpest	All animals	Indo-China	Absolute prohibition
Rinderpest	Cattle, buffalos, sheep, oxen, goats & pigs	Siam	” ”
Foot & Mouth	Goats and sheep	India	” ”
Disease	Buffalos, oxen, goats, sheep and pigs	Singapore	” ”

By Gazette Notification 177, authority from the Medical Officer must first be obtained before cattle can be imported from the neighbouring State of Kelantan while a certificate must be produced from the Chief Medical Officer, Kelantan certifying that the cattle are free from disease.

A. L. SHEILD, M.B., CH.B., (N.Z.) D.T.M.&H., F.R.C.S., (EDIN.)

MEDICAL OFFICER, TRENGGANU.

APPENDIX A.

STAFF.

(1) DISTRIBUTION OF STAFF.

The distribution of the staff at the end of the year was as follows:—

STATE.—

- 1 Medical Officer in charge.
- 1 Chief Clerk, Malay Clerk special grade.
- 2 Clerks, Malay Grade III.
- 1 Grade III English clerk.
- 1 Steward and Store-keeper.
- 1 Assistant Storekeeper.
- 1 Peon.

KUALA TRENGGANU.—

- 1 Assistant Medical Officer.

(a) General Hospital:—

- 4 Dressers grade II.
- 5 Dressers grade III.
- 4 Probationer Dressers.
- 1 Senior Staff Nurse.
- 1 Nurse grade III.
- 1 Midwife (holds certificate "B" of the Straits Settlements).
- 30 Menials (including 4 females).

(b) Town-Dispensary and Welfare Centre:—

- 1 Dresser grade I.
- 1 Midwife (holds a Japanese Certificate).
- 2 Attendants (1 female).

(c) Outdoor and Other Duties:—

- 1 Health Inspector (holds certificate of the Royal Sanitary Institute).
- 1 Travelling Dresser (Probationer).
(Dressers from the Hospital also assist in this work in rotation).
- 1 Vaccinator.

KUALA DUNGUN.—

(a) Hospital & Dispensary:—

- 1 Dresser grade I.
- 1 Dresser grade II.

APPENDIX A.—(Continued).

- 1 Midwife (holds certificate "B" of the Straits Settlements).
- 4 Menials.

(b) Out-door and other Duties:—

- 1 Health Inspector (holds certificate of the Royal Sanitary Institute).
- 1 Travelling Dresser (Probationer).
- 1 Vaccinator.

CHUKAI KEMAMAN.—

- 1 Assistant Medical Officer.

(a) Hospital & Dispensary:—

- 1 Dresser (Special Grade).
- 1 Dresser grade III.
- 1 Midwife (holds certificate "B" of the Straits Settlements).
- 6 Menials (Including 1 female).

(b) Outdoor and Other Duties:—

- 1 Health Inspector (holds certificate of the Royal Sanitary Institute).
- 1 Travelling Dresser, grade III.

KAMPONG RAJA DISPENSARY, BESUT.—

- 1 Dresser grade II.
- 1 Travelling Dresser (Probationer).
- 1 Midwife (holds certificate "B" of the Straits Settlements).
- 1 Vaccinator.
- 1 Attendant.

KAMPONG PAYANG DISPENSARY, SETIU.—

- 1 Travelling Dresser grade III.

KUALA BRANG DISPENSARY.—

- 1 Dresser grade II.
- 1 Vaccinator.
- 1 Attendant.

KEMASEK DISPENSARY.—

- 1 Dresser, grade II.

KAMPONG BULOH DISPENSARY.—

- 1 Travelling Dresser, grade III.
- 1 Attendant.

(2) APPOINTMENTS.

The following appointments were made during the year:—

Noordin bin Mahmood was appointed Probationer Dresser on 1.6.38.

Wahiddin Merican Noordin bin Alladin Merican Noordin was appointed Probationer Dresser on 1.7.38.

Abdullah bin Lincha was appointed Probationer Dresser on 1.7.38.

N. R. K. Pillai, who holds the certificate of the Royal Sanitary Institute was appointed Health Inspector, Kemaman on 8.10.38.

Mrs. A. Fisher was appointed Senior Staff Nurse on 1.8.38.

(3) RESIGNATIONS.

Dr. P. S. Raman, L.M.S., Assistant Medical Officer, Kemaman left the service on 31.8.38.

Koh Eng Phin, Sanitary Inspector, Kemaman left the service on 1.9.38.

(4) EXAMINATIONS.

Wee Hang Kang passed the June examination for grade III.

Awang Chik bin Awang passed the September Examination for grade II.

(5) PROMOTION.

Wee Hang Kang was promoted to grade III on 1.7.38.

APPENDIX B.

CALENDAR YEAR 1938.

Deaths grouped according to age, sex and race Live Births
grouped according to sex and race.

DEATHS.

Death by Age Groups.	Sex	Europeans	Eurasians	Chinese	Malays	Indians	Others	Total
0	M	—	—	12	352	4	3	371
	F	—	—	8	252	3	1	264
4 weeks	M	—	—	19	288	1	1	309
	F	—	—	15	216	2	—	223
3 months	M	—	—	15	166	1	1	183
	F	—	—	6	118	—	2	126
6 months	M	—	—	7	81	1	1	90
	F	—	—	6	70	2	—	78
1 year	M	—	—	13	203	6	—	222
	F	—	—	15	188	3	1	207
5 years	M	—	—	3	112	1	—	116
	F	—	—	6	101	1	—	108
10 years	M	—	—	1	48	—	1	50
	F	—	—	2	42	2	—	46
15 years	M	—	—	3	43	1	—	47
	F	—	—	—	39	—	—	39
20 years	M	—	—	9	68	5	—	82
	F	—	—	3	65	1	3	71
25 years	M	—	—	8	63	3	1	75
	F	—	—	6	85	—	—	91
30 years	M	—	—	24	119	7	—	150
	F	—	—	7	121	3	—	131
35 years	M	—	—	20	69	8	3	100
	F	—	—	5	70	1	—	76
40 years	M	—	—	22	110	9	—	141
	F	—	—	3	97	3	—	103
45 years	M	—	—	19	45	3	2	70
	F	—	—	2	29	1	—	32
50 years	M	—	—	29	129	1	1	160
	F	—	—	1	104	—	—	105
55 years & over	M	—	—	41	410	6	3	460
	F	—	—	9	437	2	1	449
Total Deaths..	M	—	1	245	2,306	57	17	2,626
	F	—	—	94	2,034	24	7	2,159
Births	M	—	—	321	3,877	38	33	4,269
	F	—	1	302	3,624	40	23	3,990
Total Live Births		—	1	623	7,501	78	56	8,259

APPENDIX C.

HEALTH STATISTICS OF LABOUR POPULATION IN TRENGGANU.

Name of Company.	Total Malaria cases.	Average Monthly Number of Employees.	Average Monthly Number of Dependents.	Total Average Monthly Population.	DEATHS					Total Death Rate per Mille.	SICK-RATE			
					Employees.	Dependents.	Total.	Injury.	Malaria.		Labourers.		Dependents.	
											Total Number.	Total Number of Days.	Total Number.	Total Number of Days.
1 (a) Kretay Estates	98	636	140	776	7	5	12	1	—	15.44	1,831	3,233	194	295
(b) Kretay Plantations, Kretay	12	141	55	196	—	1	1	—	—	5.10	825	820	91	39
2 Jabor Valley Estates, Jabor	611	898	224	1,122	18	17	35	—	3	31.19	2,181	11,457	494	2,477
3 Hin Leong Sawmills, Kemaman	2	98	40	138	2	—	2	1	—	14.58	5	57	—	—
4 Bundi Mining Co., Kemaman	194	285	252	537	4	2	6	1	4	11.17	763	4,391	346	2,150
5 Sungei Ayam Mining Co., Kemaman	6	44	13	57	—	—	—	—	—	—	36	276	—	—
6 Kajang Mining Co., Kemaman	20	141	45	186	—	—	—	—	—	—	112	226	23	93
7 Ishihara Sangyo Koshi, Kemaman	514	754	206	960	3	2	5	—	2	5.20	1,675	11,025	128	894
8 Nippon Mining Co., Dungun	579	2,633	479	3,112	12	—	12	1	1	3.86	10,125	46,096	1,306	6,319
Total	2,036	5,630	1,454	7,084	46	27	73	4	10	10.30	17,553	77,581	2,582	12,267

APPENDIX D.

HOSPITAL IN-PATIENTS.

Returns of diseases and Deaths for the year 1938.

DISEASES.	Remaining in Hospital at end of 1937.	Yearly Total.		Total cases Treated.	Remaining in Hospital at the end of 1938.
		Admissions.	Deaths.		
I.—Infectious and Parasitic Diseases.					
1. Typhoid fever	—	14	2	14	1
2. Paratyphoid fever	—	—	—	—	—
3. Typhus:—					
Tropical Typhus	—	1	—	1	—
4. Relapsing Fever	—	—	—	—	—
5. Undulant Fever	—	—	—	—	—
6. Smallpox	—	—	—	—	—
7. Measles	—	1	—	1	—
8. Scarlet Fever	—	—	—	—	—
9. Whooping Cough	—	—	—	—	—
10. Diphtheria	—	—	—	—	—
11. Influenza:—					
(1) With pneumonia	—	—	—	—	—
(2) With other respiratory complication	—	3	—	3	—
(3) Without respiratory complication	2	90	—	92	1
12. Cholera	—	—	—	—	—
13. Dysentery:—					
(1) Amoebic (Liver abscess, see item No. 95)	1	39	—	40	3
(2) Bacillary	—	7	1	7	1
(3) Undefined or due to other causes	—	8	1	8	—
14. Plague	—	—	—	—	—
15. Erysipelas	—	2	—	2	—
16. Acute Poliomyelitis	—	—	—	—	—
17. Eucephalitis Lethargia	—	—	—	—	—
18. Cerebro-spinal fever	—	—	—	—	—
19. Glanders	—	—	—	—	—
20. Anthrax	—	—	—	—	—
21. Rabies	—	—	—	—	—
22. Tetanus:—					
(1) Tetanus of newly born	—	1	1	1	—
(2) Other form of tetanus	—	—	—	—	—
23. Tuberculosis:—					
(1) Respiratory system	9	71	19	80	15
(2) Bones-joints knee & Ankles	—	2	—	2	—
(3) Lymphatic system	—	1	—	1	—
24. Leprosy	3	13	—	16	2
25. Syphilis:—					
(1) Primary	—	23	—	23	—
(2) Secondary	1	7	—	8	1
(3) Tertiary	2	11	1	13	—
(4) Hereditary	—	1	—	1	—
26. Other venereal diseases:—					
(1) Soft chancre	—	28	—	28	3
(2) Gonorrhoea and its complications	8	116	—	124	6
<i>Carried forward</i>	26	439	25	465	33

APPENDIX D.—(Contd.)

DISEASES.	Remaining in Hospital at end of 1937.	Yearly Total.		Total cases Treated.	Remaining in Hospital at the end of 1938.
		Admissions.	Deaths.		
<i>Brought forward</i> ..	26	439	25	465	33
(3) Gonorrhoea Ophthalmia ..	—	2	—	2	—
(4) Gonorrhoea-Arthritis ..	6	50	—	56	4
(5) Lympho-granuloma venereum	—	16	—	16	1
(6) Tropical Bubo ..	—	1	1	1	—
27. Purulent infective-septicaemia:—					
(1) Septicaemia	—	2	2	2	—
(2) Pyaemia	—	3	—	3	1
28. Yellow Fever	—	—	—	—	—
29. Malaria:—					
(1) Tertian	2	234	—	236	2
(2) Quartan	—	28	2	28	1
(3) Aestivo-Automnal (Subtertian)	6	347	10	353	8
(4) Mixed Infection	—	49	1	49	3
(5) Unclassified	11	626	9	637	21
(6) Cachexia	—	17	2	17	1
(7) Black water-Fever ..	—	4	2	4	—
30. Other diseases due—to protozoa:—					
(1) Yaws (Framboesia) ..	10	114	—	124	3
(2) Spirochaetosis icterohaemorrhagica	—	—	—	—	—
31. Ankylostomiasis	2	54	—	56	2
32. Other diseases due to helminths:—					
Cestodes	—	—	—	—	—
Nematodes					
(1) Ascaris	4	46	—	50	1
(2) Filaria trematodes	—	—	—	—	—
(3) Clonorchis Sinensis	—	1	—	1	—
(4) Other helminths	—	2	—	2	—
33. Sprue	—	—	—	—	—
34. Other infectious or parasitic diseases:—					
(1) Rubella	—	—	—	—	—
(2) Varicella (Chicken Pox) ..	—	9	—	9	—
(3) Mumps and its complications	—	1	—	1	—
(4) Dengue	—	1	—	1	—
(5) Melioidosis	—	—	—	—	—
II.—Cancer and other Tumours.					
35. Cancer of the buccal cavity cancerum oris	—	2	1	2	1
36. Cancer of the thyroid gland ..	—	1	1	1	—
37. Cancer of the digestive organ and peritoneum:—					
(1) Stomach	1	—	1	1	—
(2) Gum	—	1	—	1	—
38. Cancer of the respiratory organs- Larynx.	—	2	1	2	1
39. Cancer of the female genital organs:—					
(1) Uterus	—	1	—	1	—
<i>Carried forward</i> ..	68	2,053	58	2,121	83

APPENDIX D.—(Contd.)

DISEASES.	Remaining in Hospital at end of 1937.	Yearly Total.		Total cases Treated.	Remaining in Hospital at the end of 1938.
		Admissions.	Deaths.		
<i>Brought forward</i> ..	68	2,053	58	2,121	83
40. Cancer of the male genito-urinary organs:—					
(1) Penis	—	1	—	1	—
41. Cancer of the skin	1	2	1	3	—
42. Tumours non-malignant:—					
(1) Of female genital organ ..	1	—	—	1	—
(2) Of other sites	1	19	1	20	—
III.—Rheumatism, Diseases of Nutrition and of Endocrine Organs and other General Diseases.					
43. Rheumatic Fever	—	2	—	2	—
44. Chronic rheumatism and osteo arthritis	1	24	—	25	2
45. Diabetes (not including diabetes insipidus)	—	4	—	4	—
46. Scurvy including Barlow's disease	—	—	—	—	—
47. Beri-Beri including epidemic dropsy—	3	155	8	158	17
48. Pellagra	—	—	—	—	—
49. Debility (General)	—	5	—	5	—
50. Innanition	—	1	—	1	1
51. Diseases of the Thymus:—					
Status lymphaticus	—	1	1	1	—
IV.—Diseases of the Blood and Blood Forming Organs.					
52. Anaemia and Chlorosis:—					
(1) Pernicious Anaemia	—	—	—	—	—
(2) Secondary Anemia	1	5	1	6	—
(3) Chlorosis	—	18	1	18	2
53. Haemorrhagic Conditions:—					
Purpara	—	1	—	1	—
V.—Chronic Poisoning.					
54. Alcholism (Acute or Chronic) ..	—	2	—	2	—
55. Chronic poisoning by other organic substances:—					
Opium Addiction	1	2	—	3	—
56. Chronic poisoning by mineral substances:—					
Arsenical dermatitis	—	3	1	3	—
VI.—Diseases of the Nervous System and Sense Organs.					
57. Encephalitis (not including encephalitis lethargica)	—	1	1	1	—
58. Meningitis (not including tuber- culous meningitis or cerebro spinal meningitis)	—	1	1	1	—
59. Tabes Dorsalis	1	1	—	2	—
<i>Carried forward</i> ..	78	2,301	74	2,379	105

APPENDIX D.—(Contd.)

DISEASES.	Remaining in Hospital at end of 1937.	Yearly Total.		Total cases Treated.	Remaining in Hospital at the end of 1938.
		Admissions.	Deaths.		
<i>Brought forward</i>	78	2,301	74	2,379	105
60. Apoplexy and paralysis:—					
(1) Cerebral haemorrhage and paralysis	—	2	1	2	—
(2) Haemiplegia cause not determined	—	7	—	7	3
(3) Other paralysis	—	4	—	4	1
61. Insanity:—					
(1) Under observation	—	60	—	60	11
(2) Insanity	—	15	—	15	—
62. Epilepsy	—	1	—	1	—
63. Infantile convulsion (Age under five years)	—	—	—	—	—
64. Other diseases of the nervous systems:—					
(1) Neuritis & Neuralgia	—	17	—	17	—
(2) Paralysis Agitans	—	1	—	1	—
65. Diseases of the Eye:—					
(1) Conjunctivitis	—	25	—	25	1
(2) Iritis	—	5	—	5	1
(3) Blepharitis	—	1	—	1	—
(4) Corneal Ulcer	—	5	—	5	1
(5) Pterygium	—	1	—	1	—
(6) Panophthalmitis	—	1	—	1	—
(7) Other diseases of the eye	—	3	—	3	—
66. Diseases of the Ear and mastoid sinus:—					
(1) Otitis media	—	3	—	3	—
(2) Otitis externa	—	2	—	2	—
(3) Mastoiditis	1	—	—	1	—
VII.—Diseases of the Circulatory System.					
67. Chronic Endocarditis:—					
Valvular disease	—	—	—	—	—
Mitral valve disease	—	1	1	1	—
68. Diseases of myocardium:—					
Myocarditis (Acute or chronic)	—	5	1	5	—
69. Other diseases of the heart:—					
(1) Cardiac Failure	—	6	6	6	—
(2) Tachycardia of unknown origin	—	1	—	1	—
70. Arterio-Sclerosis	1	9	—	10	—
71. Gangrene	—	2	1	2	—
72. Other diseases of the arteries:—					
Aortic incompetence	—	1	1	1	—
73. Diseases of the Veins:—					
(1) Varicose Veins	—	1	—	1	—
(2) Haemorrhoids	—	15	—	15	4
74. Diseases of the lymphatic systems:—					
(1) Lymphangitis	—	3	—	3	—
<i>Carried forward</i>	80	2,498	85	2,578	127

APPENDIX D.—(Contd.)

DISEASES.	Remaining in Hospital at end of 1937.	Yearly Total.		Total cases Treated.	Remaining in Hospital at the end of 1938.
		Admissions.	Deaths.		
<i>Brought forward</i> ..	80	2,498	85	2,578	127
(2) Lymphadenitis ..	1	5	—	6	—
(3) Bubo (non specified) ..	—	1	—	1	—
75. Other diseases of the circulatory system:—					
Epitaxis ..	—	1	—	1	—
VIII.—Diseases of the Respiratory System.					
76. Diseases of the nasal fossae and its annexa:—					
(1) Diseases of the nose; nasal polypus ..	—	4	—	4	—
(2) Diseases of the accessory nasal sinuses ..	—	2	—	2	—
77. Diseases of the larynx:—					
Laryngismus stridulus ..	—	1	—	1	—
78. Bronchitis:—					
(1) Acute ..	—	13	—	13	1
(2) Chronic ..	5	71	—	76	2
79. Broncho-Pneumonia ..	—	7	5	7	—
80. Lobar-Pneumonia ..	—	17	5	17	1
81. Pneumonia (not otherwise defined)	—	4	3	4	—
82. Pleurisy:—					
(1) Empyema ..	—	2	—	2	—
(2) Other pleurisy ..	1	2	—	3	—
83. Asthma ..	1	35	—	36	1
84. Other diseases of the respiratory system:—					
Gangrene of the lung ..	—	1	1	1	—
IX.—Diseases of the Digestive Systems.					
85. Diseases of the buccal cavity, Pharynx etc.:—					
(1) Pyorrhoea ..	—	3	—	3	—
(2) Stomatitis ..	—	1	—	1	—
(3) Alveolar Abscess ..	—	3	—	3	—
(4) Palate Abscess ..	—	1	—	1	—
(5) Diseases of the tonsils ..	—	3	—	3	—
(6) Pharyngitis ..	—	5	—	5	—
(7) Vincent's Angina ..	—	1	—	1	—
86. Ulcer of the stomach or duodenum:—					
(1) Gastric Ulcer ..	5	9	1	14	—
(2) Duodenal Ulcer ..	—	1	—	1	—
87. Other diseases of the stomach:—					
(1) Gastritis ..	—	17	—	17	—
(2) Others ..	1	42	—	43	1
88. Diarrhoea and enteritis (under 2 years) ..	—	1	1	1	—
89. Diarrhoea and enteritis:— (2 years and over) ..	—	—	—	—	—
(1) Colitis ..	—	1	—	1	—
<i>Carried forward</i> ..	94	2,752	101	2,846	133

APPENDIX D.—(Contd.)

DISEASES.	Remaining in Hospital at end of 1937.	Yearly Total.		Total cases Treated.	Remaining in Hospital at the end of 1938.
		Admissions.	Deaths.		
<i>Brought forward</i> ..	94	2,752	101	2,846	133
(2) Otherwise defined ..	—	27	1	27	—
90. Appendicitis ..	—	4	1	4	—
91. Hernia; intestinal obstruction:—					
(1) Hernia ..	1	15	—	16	—
(2) Strangulated hernia ..	1	1	—	2	—
92. Constipation, intestinal stasis ..	1	6	—	7	—
93. Affections of the rectum & Anus:—					
(1) Fistula in Ano ..	—	1	—	1	—
(2) Ano-rectal fistula ..	1	—	—	1	—
(3) Ischio-rectal abscess ..	—	3	—	3	1
(4) Perineal Abscess ..	—	1	—	1	1
94. Cirrhosis of the liver (non syphilitic):—					
(1) Alcoholic ..	—	—	—	—	—
(2) Not returned as alcoholic ..	2	8	3	10	—
95. Other diseases of the liver:—					
Hepatitis ..	—	4	—	4	—
Amoebic abscess ..	1	1	—	2	—
96. Diseases of the gall-bladder and ducts:—					
(1) Cholecystitis without record of calculi ..	—	1	—	1	—
(2) Catarrhal jaundice ..	1	8	—	9	1
(3) Biliary Colic ..	—	1	—	1	—
X.—Diseases of the Genito-Urinary Systems (Non-Venereal).					
97. Acute Nephritis ..	1	7	—	8	1
98. Chronic Nephritis ..	1	11	4	12	3
99. Nephritis (Undefined as Acute or Chronic) ..	—	1	—	1	—
100. Other diseases of the kidney and annexa:—					
(1) Pyelitis ..	—	4	—	4	—
(2) Others ..	—	6	—	6	—
101. Calculi of the urinary passages:—					
Calculi of the kidney ..	—	1	—	1	—
102. Diseases of the bladder:—					
(1) Cystitis ..	—	3	1	3	—
(2) Ruptured bladder ..	—	1	1	1	—
103. Diseases of the Urethra:—					
(1) Stricture ..	—	5	—	5	—
(2) Ruptured Urethra ..	—	1	—	1	—
104. Diseases of the male genital organs:—					
(1) Balanitis ..	—	2	—	2	—
(2) Epididymitis ..	—	3	—	3	—
(3) Hydrocele ..	1	6	—	7	—
(4) Orchitis ..	—	4	—	4	—
(5) Phimosis ..	—	3	—	3	1
(6) Scrotal abscess ..	—	3	—	3	—
<i>Carried forward</i> ..	105	2,894	112	2,999	141

APPENDIX D.—(Contd.)

DISEASES.	Remaining in Hospital at end of 1937.	Yearly Total.		Total cases Treated.	Remaining in Hospital at the end of 1938.
		Admissions.	Deaths.		
<i>Brought forward</i> ..	105	2,894	112	2,999	141
105. Diseases of the female genital organs:—					
(1) Endometritis	—	2	—	2	1
(2) Acute salpingitis	—	1	—	1	—
(3) Ovarian cyst	—	2	—	2	—
(4) Vesico-Vaginal fistula	—	1	—	1	—
(5) Retrocele	—	1	—	1	—
(6) Laceration of hymen	—	1	—	1	—
(7) Mastitis	—	1	—	1	—
(8) Leucorrhoea	—	2	—	2	—
(9) Amenorrhoea	—	1	—	1	—
(10) Menorrhagia	—	3	—	3	—
(11) Menopause	—	1	—	1	—
XI.—Conditions Arising in Pre- gnancy, Childbirth and the Puerperal State.					
106. Ante-natal	—	9	—	9	—
107. Hydatid Mole	—	1	—	1	—
108. Abortion not returned as septic:—					
(1) Abortion without record of haemorrhage	—	1	—	1	—
(2) Threatened Abortion	—	1	—	1	—
109. Puerperal haemorrhage:—					
(1) Placenta praevia	—	1	1	1	—
(2) Post-partum haemorrhage	—	2	—	2	—
110. Retained placenta	—	1	—	1	—
111. Puerperal Fever	—	2	—	2	—
112. Toxaemias of Pregnancy:—					
(1) Post-partum eclampsia	—	1	—	1	—
(2) Albuminuria of pregnancy	—	1	—	1	—
(3) Ante-partum eclampsia	1	—	—	1	—
113. Conditions associated with labour:—					
(1) Normal labour	3	110	—	113	3
(2) Abnormal labour	—	11	2*	11	1
(Caesaerean section)					
(3) Accidents of childbirth	—	—	—	—	—
XII.—Diseases of the Skin and Cellular Tissues.					
114. Carbuncle, boils	—	16	—	16	—
115. Cellulitis, Acute Abscess:—					
(1) Cellulitis	2	13	—	15	—
(2) Acute Abscess	3	69	—	72	4
116. Elephantiasis	—	1	—	1	—
117. Ulcers	24	224	—	248	24
118. Dermal Mycoses	1	7	—	8	—
119. Eczema	1	13	—	14	1
120. Tinea	—	14	—	14	1
121. Herpes	—	3	—	3	—
122. Scabies	1	25	—	26	1
123. Psoriasis	—	1	—	1	—
124. Urticaria	—	4	—	4	—
<i>Carried forward</i> ..	141	3,441	115	3,582	177

APPENDIX D.—(Contd.)

DISEASES.	Remaining in Hospital at end of 1937.	Yearly Total.		Total cases Treated.	Remaining in Hospital at the end of 1938.
		Admissions.	Deaths.		
<i>Brought forward</i> ..	141	3,441	115	3,582	177
125. Dermatitis ..	—	5	—	5	—
126. Others ..	—	4	—	4	—
XIII.—Diseases of the Bones and Organs of Locomotion.					
127. Periostitis ..	—	2	—	2	—
128. Arthritis ..	—	14	—	14	1
129. Synovitis ..	—	1	—	1	—
130. Osteomyelitis ..	—	7	—	7	3
131. Pleurodynia ..	—	2	—	2	—
132. Myositis ..	—	1	—	1	—
133. Congenital Malformations:— Harelip ..	—	1	—	1	—
XIV.—Diseases of Early Infancy.					
134. Marasmus ..	—	2	1	2	—
XV.—Conditions associated with Old Age.					
135. Senility ..	—	1	—	1	—
XVI.—Affections produced by External Causes.					
136. Suicide by cutting instruments ..	—	2	1	2	—
137. Attack by Venomous animals:—					
(1) Snake bite ..	—	1	—	1	—
(2) Insect bite ..	—	1	—	1	—
(3) Others ..	—	2	—	2	—
138. Food Poisoning ..	—	3	—	3	—
139. Accidental burns:—					
(1) Burn by Fire ..	—	10	1	10	—
(2) Scalds ..	—	8	—	8	—
140. Injury by cutting or piercing instruments ..	5	51	—	56	2
141. Injury by fall, crushing, etc.:—					
(1) By fall ..	—	86	—	86	4
(2) By Motor-Car ..	—	—	—	—	—
142. Attacks by animals:— (Except poisoning by venomous animals) Goring, bites, kicks, etc.	1	2	—	3	—
143. Sprain ..	1	13	—	14	1
144. Fractures ..	2	18	2*	20	2
			(Fracture skull)		
145. Dislocations ..	—	2	—	2	1
146. Amputation of lower extremities ..	—	2	—	2	—
147. Adhesion of wrist to forearm ..	—	1	—	1	—
148. Concussion of the Brain ..	—	1	—	1	—
149. Other external injuries ..	—	45	—	45	2
XVII.—Ill-defined Conditions.					
150. Oedema of Unknown Origin ..	—	2	—	2	—
151. Fever Unclassified ..	1	39	—	40	4
152. Persons admitted for observation ..	1	2	—	3	—
153. Persons accompanying patients ..	—	10	—	10	—
154. Malingering ..	—	1	—	1	—
Total ..	152	3,783	120	3,935	197

APPENDIX E.
RETURN OF OPERATIONS.

Pathological condition and Nature of Operations.	Number of Cases.					Result.		
	Kuala Trengganu Hospital and Dispensary.	Chukai Kemaman Hospital and Dispensary.	Kuala Dungun Hospital and Dispensary.	Other Dispensaries	Total.	Relieved.	Cured.	Died.
Skins & subcutaneous tissues:—								
Abscesses, boils, carbuncles cellulitis etc.	48	67	33	10	158	—	158	—
Sinuses excised & scraped . .	10	—	—	—	10	—	10	—
Removal of nail	1	—	—	—	1	—	1	—
Suturing wounds	14	15	27	9	65	—	65	—
Cauterization of sores (Thermo-Cautery)	6	—	—	—	6	—	6	—
Removal of foreign bodies:—								
Ear	—	1	—	—	1	—	1	—
Eye	4	4	—	—	8	—	8	—
Nose	1	—	2	—	3	—	3	—
Upper extremity	2	4	1	—	7	—	7	—
Lower extremity	4	3	1	—	8	—	8	—
Evisceration of eye	1	—	—	—	1	—	1	—
Removal of Cysts:—								
Meibomian	—	1	—	—	1	—	1	—
Sebaceous	10	8	—	1	19	—	19	—
Excision of sloughing ulcer	—	1	—	—	1	—	1	—
Disarticulation of crushed finger (from 2nd inter- phalangeal joints)	—	1	—	—	1	—	1	—
Excision of warts	—	2	—	—	2	—	2	—
Tumours:—								
Fibroma	1	—	1	—	2	—	2	—
Others	11	1	—	—	12	—	12	—
Excision of crushed gangrenous finger	—	1	—	—	1	—	1	—
Tracheotomy for carcinoma of neck	1	—	—	—	1	—	—	1
Blood transfusion	1	—	—	—	1	1	—	—
Lymphatic Glands:—								
Incision of bubo etc.	9	—	5	—	14	—	14	—
Operation on nervous system:—								
Phrenectomy for pulmonary tuberculosis	1	—	—	—	1	1	—	—
Lips, Eyes, Mouth & Sali- vary glands:—								
Hypopion ulcer (Cauteri- zation)	—	1	—	—	1	—	1	—
Pterygium	1	1	—	—	2	—	2	—
Aveolar Abscess	1	—	—	—	1	—	1	—
Cancrum Oris	—	1	—	—	1	—	—	1
Epulis	1	—	—	—	1	—	1	—
Extraction of teeth	205	146	8	1	360	—	360	—
Extraction of teeth & scraping of antrum of Highmore	1	—	—	—	1	—	1	—
<i>Carried forward</i>	334	258	78	21	691	2	687	2

APPENDIX E.—(Contd.)

Pathological condition and Nature of Operations.	Number of Cases.					Result.		
	Kuala Trengganu Hospital and Dispensary.	Chukai Kemaman Hospital and Dispensary.	Kuala Dungun Hospital and Dispensary.	Other Dispensaries	Total.	Relieved.	Cured.	Died.
<i>Brought forward</i> ..	334	258	78	21	691	2	687	2
Repairs of hare-lip ..	—	2	—	—	2	—	2	—
Ear, Mastoid, etc.:—								
Ear-boring, repairs for this and other minor plastic operation	3	1	—	—	4	—	4	—
Nose:—								
Nasal polypus	4	—	—	—	4	—	4	—
Spine & Meninges:—								
Diagnostic Lumbar puncture	6	—	—	—	6	6	—	—
Thorax:—								
Aspiration of Empyema ..	1	—	—	—	1	1	—	—
Rib-section for empyema ..	1	—	—	—	1	—	1	—
Abdomen:—								
Accidental wound with protrusion of intestines from the aperture in the abdomen	—	1	—	—	1	—	—	—
Laparotomy for penetrating wound	1	—	—	—	1	—	1	—
Paracentesis Abdominis ..	3	2	—	—	5	4	1	—
Gastroenterostomy ..	2	—	—	—	2	—	—	2
Aspiration of liver abscess ..	2	—	—	—	2	—	2	—
Caesarean Section ..	2	—	—	—	2	—	—	2
Appendicetomy ..	1	—	—	—	1	—	1	—
Rectum & Anus:—								
Perineal abscess ..	1	—	—	—	1	—	1	0
Fi-stula in ano ..	—	1	—	—	1	—	1	—
Ischio-rectal abscess ..	1	—	—	—	1	—	1	—
Excision of haemorrhoids ..	2	1	—	—	3	—	3	—
Sigmoidoscopy	3	—	—	—	3	—	—	—
Hernia:—								
Radical cure for oblique inguinal hernia ..	9	—	—	—	9	—	9	—
Ventral hernia	1	—	—	—	1	—	—	1
Male Uro-genital organs:—								
Paraphimosis (Dorsal slit)	1	—	—	—	1	—	1	—
Circumcision	4	—	2	—	6	—	6	—
Hydrocele, radical cure ..	5	—	—	—	5	—	5	—
Stone in urethra ..	1	—	—	—	1	—	1	—
Hydrocele, tapping & injection of sclerosing solution	1	1	—	—	2	2	—	—
Supra-pubic cystotomy for ruptured bladder ..	1	—	—	—	1	—	—	1
Supra pubic cystotomy for rupture of urethra ..	1	—	—	—	1	—	1	—
<i>Carried forward</i> ..	391	267	80	21	759	15	732	8

APPENDIX E.—(Contd.)

Pathological condition and Nature of Operations.	Number of Cases.					Result.		
	Kuala Trengganu Hospital and Dispensary.	Chukai Kemaman Hospital and Dispensary.	Kuala Dungun Hospital and Dispensary.	Other Dispensaries	Total.	Relieved.	Cured.	Died.
<i>Brought forward</i> ..	391	267	80	21	759	15	732	8
Partial rupture of urethra (Scrotal incision) ..	1	—	—	—	1	—	1	—
Peri-urethral abscess ..	1	—	—	—	1	—	1	—
Scrotal Abscess ..	4	—	—	—	4	—	4	—
Partial excision of penis ..	1	—	—	—	1	1	—	—
Complete excision of penis	1	—	—	—	1	—	1	—
Dilatation of Stricture ..	4	1	—	—	5	1	4	—
Female uro-genital organs:—								
Forceps, Application of	2	—	—	—	2	—	2	—
curetting for metrorrhagia	1	—	—	—	1	—	1	—
Bones:—								
Reduction of fractures ..	3	—	—	—	3	—	3	—
Osteomyelitis of upper arm	1	—	—	—	1	—	1	—
Osteo-myelitis of other side	—	1	—	—	1	—	1	—
Pathological fracture of Humerus	1	—	—	—	1	—	1	—
Joints:—								
Adhesion of wrist joint ..	—	1	—	—	1	1	—	—
Aspiration of knee joint ..	4	—	—	—	4	—	4	—
Reductions of dislocations:—								
Shoulder	—	1	—	—	1	—	1	—
Hip	1	—	—	—	1	—	1	—
Amputation:—								
Carpal & Metacarpal bones	2	—	—	—	2	—	2	—
Thigh	—	1	—	—	1	—	1	—
Legs	2	—	—	—	2	—	2	—
Toe	1	1	—	—	2	—	2	—
Total ..	421	273	80	21	795	18	765	8

APPENDIX F.

Details of Out-patients Treated at the Various Dispensaries.

Dispensaries.	1937			1938			New Cases Treated on Visits to Kampongs.			
	Total New Patients.	Total Attendances.	Total New Cases on Visits to Kampongs.	New cases.		Total New Cases.	Total Attendances.	Males.	Females.	Total.
				Males.	Females.					
1. Kampong Raja, Besut	5,683	6,209	51	4,580	1,498	6,078	6,901	233	65	298
2. Travelling Dresser, Besut	7,685	8,653	7,685	1,305	397	1,703	1,703	1,305	398	1,703
3. Setiu Travelling Dresser	8,266	8,726	6,331	4,068	1,751	5,819	5,948	1,793	1,101	2,894
4. Kuala Trengganu Town Dispensary & Clinic	19,371	34,050	—	10,333	2,924	13,257	20,974	—	—	—
5. Kuala Trengganu Hospital Dispensary	9,244	10,898	—	4,089	1,368	5,457	6,750	—	—	—
6. Kuala Trengganu Travelling Dresser	15,724	18,422	15,724	18,540	9,769	28,309	33,327	18,540	9,769	28,309
7. Kuala Brang	16,025	16,305	10,790	6,297	2,799	9,096	9,763	2,404	1,448	3,852
8. Kuala Dungun	6,539	9,620	—	5,099	994	6,093	8,590	—	—	—
9. Kuala Dungun Travelling Dresser	9,277	9,664	9,277	3,356	2,448	5,804	6,017	3,356	2,448	5,804
10. Kemasek Travelling Dresser	8,495	9,372	6,382	5,043	1,376	6,419	6,782	2,836	696	3,532
11. Kemaman	6,004	9,954	—	4,247	993	5,240	8,954	—	—	—
12. Kemaman Travelling Dresser	5,389	7,553	5,389	3,621	1,005	4,626	6,350	3,621	1,005	4,626
13. Kampong Buloh Travelling Dresser	8,038	8,427	5,805	8,565	3,807	12,372	13,323	6,857	3,089	9,946
14. Vaccinators	15,822	16,571	15,822	13,848	7,266	21,114	21,706	13,848	7,266	21,114
15. Police-Customs etc.	863	863	863	426	159	585	585	426	159	585
Total	142,425	175,287	84,119	93,417	38,554	131,972	157,673	55,219	27,444	82,663

APPENDIX G.
LABORATORY WORK.

	Kuala Trengganu.	Chukai Kemaman.	Kuala Dungun.	Kuala Brang.	Kampong Raja.	Total.
BLOOD.						
Microscopical examination for Protozoa:—						
Total No. of films examined	2,553	976	741	78	53	4,401
Negatives	2,174	484	607	57	49	3,371
Positives	379	492	134	21	4	1,030
Plasmodium Vivax	101	140	99	18	4	362
Plasmodium falciparum	223	272	30	3	—	528
Plasmodium Malariae	23	22	2	—	—	47
Plasmodium Vivax and Falciparum	27	40	2	—	—	69
Plasmodium Vivax and Malariae	—	7	1	—	—	8
Plasmodium falciparum and Malariae	5	5	—	—	—	10
Microscopical Examinations for Microfilaria (All Negatives)	17	1	—	—	—	18
Differential counts of Leucocytes	18	1	4	—	—	23
Enumerations of Leucocytes	—	1	3	—	—	4
Enumerations of erythrocytes	40	—	3	—	—	43
Widal Reaction:—						
Total performed from 34 patients	49	—	—	—	—	49
B. typhosus Positive	8	—	—	—	—	8
Weil-Felix Reaction:—						
Positive to B. Proteus X "W" Strain	1	—	—	—	—	1
Kahn Test:—						
Number performed	447	—	—	—	—	447
Negative	384	—	—	—	—	384
Positive	63	—	—	—	—	63
Estimation of blood sugar Bacteriology	1	—	—	—	—	1
"Dmelcos" Skin test for soft sore (26 positive)	35	—	—	—	—	35
SPUTUM.						
Microscopical examination for B. Tuberculosis:—						
Total No. Examined	375	45	49	—	2	471
Positive	56	17	8	—	1	81
Cervix, Conjunctiva, urethra etc:—						
Microscopical examination for Gonococci						
Total No. examined	897	26	22	2	—	947

APPENDIX G.—(Contd.)

	Kuala Trengganu.	Chukai Kemaman.	Kuala Dungun.	Kuala Brang.	Kampong Raja.	Total.
Positive	295	15	18	1	—	329
Smear from throat for K.L.B. (Negative)	1	—	—	—	—	1
Nose and Skin:—						
Microscopical examination for the lepra bacillus						
Total No. examined	24	—	—	—	—	24
Positive	2	—	—	—	—	2
Smear from ulcer stomach	—	1	—	—	—	1
Gastric Analyses	15	—	—	—	—	15
URINE.						
Chemical and Microscopical examination (excluding routine examination in the wards)	308	735	49	100	39	1,231
FAECES.						
Infections with ankylostoma, ascaris and trichuris is very common; entamoeba histolytica, entamoeba coli, lamblia intestinalis and strongloids are not nearly so frequent Tapeworm, distomes oxyuris Vermicularis are occasion- ally observed, but there was no case in 1938.						
The following are the result of the examination:—						
Preparations examined	2,051	1,051	912	86	222	4,322
Negatives	767	405	86	3	41	1,302
Positive	1,284	646	826	83	181	3,020
Ankylostoma	81	105	28	10	12	236
Ascaris	287	87	37	10	65	486
Entamoeba Coli	—	3	—	—	—	3
Entamoeba histolytica	17	19	9	—	—	45
Entamoeba histolytica anky- lostoma, ascaris and Trichuris	7	—	—	—	—	7
Lamblia intestinalis	5	—	—	—	—	5
Lamblia intestinalis and ascaris	6	—	—	—	—	6
Pus or blood cells or pus and blood cells	78	32	10	10	11	141
Blood and pus cells and ascaris	18	—	—	—	—	18
Pus and blood cells and charcot-lyden crystals	2	—	—	—	—	2
Strongyloids	2	—	—	—	—	2
Trichuris	158	57	—	7	34	256
Ankylostoma & Ascaris	72	85	109	8	25	299
Ankylostoma, Ascaris and Trichuris	74	91	136	13	2	316

APPENDIX G.—(Contd.)

	Kuala Trengganu.	Chukai Kemaman.	Kuala Dungun.	Kuala Brang.	Kampong Raja.	Total.
Ascaris & Strongyloids ..	3	—	—	—	—	3
Ankylostoma & strangyloids	1	—	—	—	—	1
Ankylostoma & Trichuris ..	35	21	72	—	11	139
Ascaris & Trichuris ..	415	144	425	24	21	1,029
Ankylostoma, blood and pus cells	—	1	—	—	—	1
Examination for B. Tuber- culosis (Negative) ..	1	—	—	—	—	1
Cyst of E. histolytica, ascaris & Trichuris ..	2	—	—	—	—	2
Trichuris, blood and pus cells	4	—	—	—	—	4
Ankylostoma, ascaris, blood and pus cells and charcot lyden crystals ..	3	—	—	—	—	3
Ankylostoma, ascaris, tri- churis, blood & pus cells	7	—	—	—	—	7
Ankylostoma, ascaris, intes- tinalis lamblia, blood and pus cells	3	—	—	—	—	3
Ascaris, intestinalis lamblia, and pus cells ..	1	—	—	—	—	1
Lamblia intestinalis, blood and pus cells	1	—	—	—	—	1
Clonorchis Sinensis ..	1	—	—	—	—	1
For Occult Blood:—						
Examination numbered ..	29	—	—	—	—	29
Positive	25	—	—	—	—	25

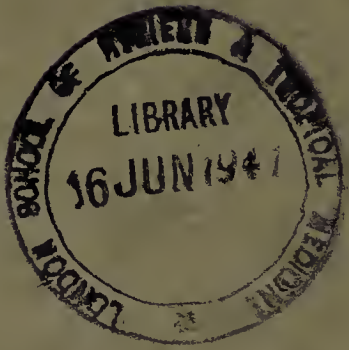
APPENDIX H.

New Cases of Hospital In-patients by Race for 1938.

	Malays.	Chinese.	Indians.	Others.	Total.
Kuala Trengganu Hospital	892	865	334	10	2,101
Chukai Kemaman Hospital	522	165	289	86	1,062
Kuala Dungun Hospital	104	190	290	46	620
Total	1,518	1,220	913	132	3,783
By Percentage	40.13%	32.25%	24.13%	3.49%	100%

Out-patients treated by Department by Race.

	Malays.	Chinese.	Indians.	Others.	Total.
Kampong Raja Dispensary	5,734	245	95	14	6,078
Kemaman Dispensary	3,004	1,790	410	36	5,240
Travelling Dresser, Kuala Trengganu ..	22,124	320	113	—	22,557
Travelling by Medical Officer and Senior Dresser	5,705	40	7	—	5,752
Kemasek Dispensary	5,033	1,246	118	22	6,419
Kuala Brang Dispensary	8,993	83	20	—	9,096
Town Dispensary & Clinic	10,482	2,369	365	41	13,257
Kampong Buloh Dispensary	12,035	289	48	—	12,372
Travelling Dresser, Kemaman	4,600	26	—	—	4,626
Travelling Dresser & Vaccinator, Besut	5,541	55	19	2	5,617
Kuala Trengganu Hospital Dispensary	3,782	1,126	430	119	5,457
Customs & Police	585	—	—	—	585
Travelling Dresser, Setiu	5,745	55	19	—	5,819
Vaccinator, Kuala Brang	6,977	61	1	—	7,039
Vaccinator, Kuala Trengganu	9,371	17	1	—	9,389
Dungun Dispensary	4,753	815	426	99	6,093
Travelling Dresser, Dungun	5,465	335	4	—	5,804
Vaccinator, Dungun	756	16	—	—	772
Total	120,675	8,888	2,076	333	131,972
By Percentage	91.48%	6.72%	1.54%	0.26%	100%



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